

Editorial

Cardiac surgery in the elderly: a cardiologist's perspective

It is axiomatic that symptomatic aortic stenosis is a malignant condition for which the only effective treatment is valve replacement.¹ Of course, several factors other than the state of the valve have to be considered before surgery is recommended to a patient. Important among these are the presence and severity of other disease, and the estimated risks of perioperative death or serious complications. Decision making is often difficult in the case of elderly patients—arbitrarily taken to mean those aged 70 and older—in whom weighing the risks and benefits of surgery may be a complex matter. How do the studies in this issue²⁻⁴ contribute to the evidence base on which our advice should stand?

Bouma and colleagues from the Netherlands² report an observational study of 205 patients aged 70 and older (33% \geq 80 years) who were identified by Doppler echocardiography as having an aortic valve area of $< 1 \text{ cm}^2$ or a maximum aortic valve gradient $> 50 \text{ mm Hg}$. Patients with severe comorbidity, or who had declined valve surgery, were excluded. They investigated the differences in clinical and echocardiographic characteristics as well as outcome between patients initially managed medically and those who had valve replacement. They draw two conclusions: elderly patients with symptomatic aortic stenosis are often denied surgery; and valve replacement in this age group improves survival, especially if left ventricular contraction is impaired.

Their second point is uncontroversial. Aortic valve replacement can extend survival in patients of all ages with symptomatic aortic stenosis; for the very old (aged \geq 80) life expectancy without surgery is \leq 25% three years after diagnosis; with surgery, it can be \geq 75%.⁵ Other studies⁶⁻⁸ have also established that left ventricular dysfunction is the most important adverse prognostic factor in unoperated patients.

But can we accept Bouma *et al*'s first conclusion? It is based on the observation that 56 of 135 patients did not have valve replacement, despite severe symptoms. Reasons given in the medical records as to why surgery was not recommended included left ventricular dysfunction or associated coronary disease, which are, as the authors point out, arguments in favour of rather than against valve replacement. There also appeared to be a bias against surgery for the very old, with only 24% of those aged \geq 80 having valve replacement compared with 57% of those < 80 . But when patients were stratified into low, intermediate, and high risk groups, aortic valve replacement did not confer a survival advantage to those at low and intermediate risk, while the gain for those at high risk was substantial and in line with previous estimates (three year survival 25% without valve replacement *v* 76% after surgery).

Most clinicians agree that some elderly patients with symptomatic aortic stenosis are being denied the operation they should have. But these findings suggest that there may be others for whom surgery can properly be deferred or avoided. Much of the benefit of valve replacement in patients of this age is in prolongation of survival, as the short and long term morbidity associated with surgery tends to offset the improvement it may give in quality of life.⁹ Thus, if there is no survival advantage from

surgery—at least over the medium term—conservative management may be a reasonable option.

As the estimate of operative risk is an important element in our decision making, especially in elderly patients, an objective and explicit method of computing this is clearly desirable. The Parsonnet score¹⁰ is one such method, but its accuracy in elderly patients having aortic valve replacement is questionable. It predicts the risk of early mortality after isolated aortic valve replacement in patients > 80 to be at least 25%, and that after valve replacement combined with coronary bypass grafting to be at least 27%. These high estimates largely reflect the 20% risk assigned to age > 80 (compared with 7% for age 70–74, and 12% for age 75–79). However, a study of the United Kingdom heart valve registry found much lower mortality rates¹¹: in 1100 patients aged ≥ 80 who had aortic valve replacement in > 30 UK centres between January 1986 and December 1995, the 30 day mortality was only 6.6%, with actuarial survival of 89% at one year and 79% at three years.

Zaidi and colleagues³ from Manchester, UK report the 30 day outcome of 575 patients aged ≥ 70 who underwent a variety of cardiac surgical procedures between January 1990 and December 1996. There were 135 patients with aortic stenosis, in whom the 30 day mortality was 6.7%. Rates of mortality and serious morbidity were generally low. The authors conclude that “concerns over the risk of cardiac surgery in the elderly should not prevent referral and elderly patients usually do well”.

This statement needs several qualifications. Their study was retrospective, and the decision to publish the results may have been influenced by the fact that these were considered better than average. The policy of the unit was to operate on essentially all patients referred for surgery. However, the median age of the patients undergoing surgery was 72, and only 5% of the total were ≥ 80 . It seems likely that there was, as might be expected, a referral bias in favour of the young elderly. The authors do not provide any information on the longer term outcome of surgery, or its effects on functional status and quality of life.

Valve replacement in the very old with aortic stenosis is the focus of the study by Gilbert and colleagues from Oxford, UK⁴. Of 103 patients aged ≥ 80 who had aortic valve replacement between January 1987 and December 1996, 19 died within 30 days of surgery. Actuarial survival after surgery (estimated from fig 2 of their paper) was 77% at one year and 62% at three years. This early mortality is almost three times that reported by the UK heart valve registry¹¹ over a very similar time period. The Oxford patients were not significantly older (mean age 83 (range 80–95) compared with 82 (80–93) in the UK heart valve registry), and the ratio of male:female patients was very similar (Oxford 1:1.1; UK heart valve registry 1:1.3). It is possible that the Oxford patients had more severe symptoms, had a higher prevalence of coronary disease, or required urgent surgery in a larger proportion of cases; regrettably the report from the UK heart valve registry does not include information on these important determinants of operative risk.

The Oxford patients had a particularly high incidence of stroke (16.5%), and stroke was judged to be the cause of early death in 6% of patients (compared to $< 1\%$ of

patients in the UK heart valve registry series). The incidence of stroke after aortic valve replacement in this age group in previous reports has ranged from 1.4% (of 71 patients)¹² to 11.1% (of 171 patients).¹³ It remains unclear to what extent this wide range reflects differences in operative technique, characteristics of the patients, or chance.

Conclusion

Elderly patients with symptomatic aortic stenosis are a diverse group, and our decision making has to take account of this. Those with severe symptoms and no other medical problems of importance are easy to advise: if they want an operation, they should have it as they stand to gain substantially in health and longevity from valve replacement. However, there are many others in whom we are truly uncertain as to the right course of action. It is unlikely that further observational studies will help resolve this uncertainty; a randomised trial of early versus deferred surgery is surely the way forward.

D C SPRIGINGS

Department of Cardiology,
Northampton General Hospital,
Northampton, NN1 5BD, UK

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